

Medical Imaging

with Dr. Kiran K.
Solingapuram Sai

Talking points

Knowledge and Comprehension

1. What is positron emission tomography (PET)?
2. What are radiotracers?
3. What process does Kiran follow when creating a new radiotracer?

Application

4. What biological activity would you be most interested to see using a PET scanner, and why?
5. What areas of medical imaging would interest you most as a possible career path? What skills or traits do you have already that could help you on your way?

Analysis

6. How does PET compare to other methods such as X-ray or magnetic resonance imaging (MRI)?
7. What are the advantages of developing imaging techniques that are able to investigate and diagnose conditions of the heart and brain?

Evaluation

8. Developing a new radiotracer can take many years and cost a lot of money. To what extent do you think the potential benefits justify the investment?
9. Kiran tests his radiotracers using animals and humans. What do you think are the advantages, disadvantages, and ethical considerations of medical research tests in animals and in humans?
10. Kiran talks about the importance of multidisciplinary work in medical imaging. Why do you think working with professionals who have different specialties is valuable, and what do you think the challenges could be? How good are you at working with others?

Activity

Researchers like Kiran often have to apply for funding to cover the costs of their research. As part of a group, pick one of the radiotracers Kiran talked about in the article and prepare a presentation for potential funders explaining why they should provide the money to get the research through the final stages. Assume the people on the funding committee only have a very general understanding of science.

Include the following:

- Definitions of any key terms
- Information about the disease or condition at the center of the research and how the radiotracer will help
- Details about the radiotracer involved and how it was developed
- Details about the testing that has been carried out so far, and any successes
- How you think it could impact the lives of patients and their families
- What further research could also be carried out in the future

Think about how you will make your presentation engaging, interesting, and convincing while keeping it clear, accurate, and factual. Share your presentation with your fellow students, and watch theirs.

Reflection questions

- How well do you think each of the presentations a) explained the science and b) provided convincing reasons for funding?
- Did you enjoy creating your presentation? What did you find challenging? What would you do differently in the future?
- How would the style, tone, and approach of your presentation change if the aim was to educate other medical professionals about your new radiotracer? Or if it was to explain to a patient how the PET scan works?

More resources

- Visit Kiran's Futurum webpage to read his article in Spanish and to find an animation, podcast, and PowerPoint about his work: futurumcareers.com/medical-imaging-with-dr-kiran-k-solingapuram-sai
- Watch this series of TED Talks to explore different ideas and research on the topic of medical imaging: ted.com/topics/medical+imaging
- This video from Cancer Research UK shows what it is like to have a PET scan: youtube.com/watch?v=Ik-VzATcv4M
- To learn more about guidelines for medical research in humans, visit the NIH considerations for human subjects research website (grants.nih.gov/policy-and-compliance/policy-topics/human-subjects) and read the Belmont Report (hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html).
- To learn more about guidelines for medical research in animals, visit the Office of Laboratory Animal Welfare (OLAW) (grants.nih.gov/policy-and-compliance/policy-topics/animal-welfare) and Animals in NIH Research (grants.nih.gov/policy-and-compliance/policy-topics/air)



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